

The Genus *Adiantum* L. in Japan (I)

By

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田川基二：邦産くじゃくしだ属ノ分類（其一）

Adiantum L. is a large genus, distributed over both hemispheres, with over 200 species of terrestrial ferns usually of shady and moist habit, and with a preponderance of species in tropical America. But it is rather rare in Japan, where only 15 species are native. Most of them are tropical or subtropical elements of wide distribution. The present paper is a taxonomic review of the Japanese species of the genus.

Before going further I wish to offer my best thanks to Professor KOIDZUMI for his kind direction. Particular thanks are also due to the various persons who kindly sent materials for my use. Mr. Y. ARAI, Mr. M. OGATA, Mr. I. SIMOZAWA, Mr. J. SUGIMOTO, and Mr. T. TUYAMA.

Key to the Japanese Species

A¹. Frond unipinnate.

B¹. Stipe, rachis, and stalks of pinnæ narrowly winged.

.....1) *A. soboliferum*.

B². Stipe, rachis, and stalks of pinnæ unwinged.

C¹. Stipe, rachis, and pinnæ hirsute 2) *A. caudatum*.

C². Stipe and rachis glabrous, pinnæ setulose or glabrous.

D¹. Pinnæ and indusia more or less setulose.

.....14) *A. diaphanum*.

D². Pinnæ and indusia quite glabrous.

E¹. Pinnæ dimidiate, rachis often elongated and rooting at apex.

F¹. Pinnæ long-stalked3) *A. philippense*.

F². Pinnæ nearly sessile4) *A. Edgeworthii*.

E². Pinnæ equal-sided or nearly so.

F¹. Pinnæ orbicular or nearly so, not cuneate at base,
rachis often elongated and rooting at apex

..... 5) *A. capillus junosis*.

- F². Pinnæ flabellate, more or less deeply lobed, cuneate at base, rachis never elongated and rooting at apex
.....6) *A. capillus veneris*.
- A². Frond pinnately or dichotomously compound.
- B¹. Ultimate pinnæ and indusia glabrous.
- C¹. Frond pinnately 2-4-pinnate, ultimate pinnæ equal-sided or nearly so, cuneate at base.
- D¹. Sori attached to the broad and very shallow sinus of the outer edge.
- E¹. Ultimate pinnæ more or less deeply lobed.
- F¹. Veinlets reaching to the apices of teeth.
- G¹. Rhizome-scales linear-subulate, up to 3 mm. long, stipe castaneous, pinnæ hardly imbricate6) *A. capillus veneris*.
- G². Rhizome-scales narrowly lanceolate to subulate-lanceolate, 2-2.5 mm long, stipe ebeneous, pinnæ imbricate.7) *A. ogasawarense*.
- F². Veinlets falling short of the apices of teeth or the edge of ultimate pinna8) *A. formosanum*.
- E². Ultimate pinnæ not lobed, veinlets reaching to the apices of teeth9) *A. coreanum*.
- D². Sori attached to the deep sinus of the outer edge.
- E¹. Fertile ultimate pinnæ less than 4 mm long, sterile ones 6 mm long, obscurely denticulate or subentire on outer edge.10) *A. taiwanianum*.
- E². Ultimate pinnæ both fertile and sterile larger, denticulate on outer edge11) *A. monochlamys*.
- C². Frond dichotomously divided into numerous unipinnate branches, ultimate pinnæ conspicuously dimidate.
- D¹. Frond dichotomously forked, and the main divisions dichotomously 1 to 3 times branched, rachis of branch sentulose above, ultimate pinnæ more or less coriaceous.
.....12) *A. flabellatum*.
- D². Frond dichotomously forked, with numerous pinnæ springing from the upper side of each of the 2 main divisions, rachis of branch glabrous, ultimate pinnæ more or less membra-

- naceous 13) *A. pedatum*.
- B². Ultimate pinnæ more less setulose.
- C¹. Lamina composed of 1 terminal pinna and 1-2-pairs of lateral ones, each pinna unipinnate, rachis glabrous.
- 14) *A. diaphanum*.
- C². Lamina dichotomously forked, with numerous unipinnate pinnæ springing from the upper side of each of the 2 main divisions, rachis hirsute 15) *A. pubescens*.

Enumeration of the Japanese Species

1) ***Adiantum soboliferum*** WALL., List n. 74 (1828), nom. nud.: HOOK., Sp. Fil. 2. 13. t. 74 A (1851); BEDD., Ferns Brit. Ind. t. 15 (1867); C. CHR., Ind. Fil. 33 (1905); Suppl. III. 197 (1934).

Adiantum caudatum L. var. *soboliferum* (WALL.) BEDD., Handb. 84 (1883).

Adiantum Mettenii KUHN, Fil. Afr. 65 (1868), nom. nud.; HOOK. & BAK., Syn. Fil. ed. 2. 472 (1874); v. A. v. R., Mal. Ferns 326 (1908); C. CHR., Ind. Fil. 30 (1905); in Dansk Bot. Ark. 7. 124. t. 48. fig. 4 (1932).

Adiantum lunulatum BURM. var. *Mettenii* (KUHN) BEDD., Ferns Brit. Ind. Jupl. 6. t. 354 (1876); Handb. 83 (1883).

Adiantum Balanœ BAK. in Journ. Bot. 28. 263 (1890).

Adiantum alatum COPEL. in PERKINS, Fragm. 192 (1905); Polypod. Phil. 93 (1905).

Adiantum lunulatum (BURM. err. det.) OGATA, Ic. Fil. Jap. 2. t. 53 (1929).

Adiantum dolabriforme (HOOK. err. det.) C. CHR., Ind. Fil. Suppl. III. 19 (1934).

Nom. Jap. *Nise-hangetukuzuyaku*.

Hab. Formosa. Prov. Takao; Bankinsing (U. FAURIE, No. 248! Feb. 1914).

Distr. West tropical Africa, India, Indo-China, Philippines, and Formosa.

2) ***Adiantum caudatum*** L., Mant. 308 (1771); Sw., Syn. Fil. 122 (1806); WILLD., Sp. Pl. 5. 431 (1810); HOOK., Exot. Fl. 2. t. 104 (1825); Sp. Fil. 2. 13 (1851); BENTH., Fl. Hongk. 447 (1861); BEDD., Ferns South. Ind. t. 2 (1863); Handb. 83 (1883); MILDE, Fil. Eur. Atl. 29 (1867); HOOK. & BAK., Syn. Fil.

115 (1867); KEYS. in Mém. Ac. St. Petersb. VII: **22**², 2, 25 (1875); HARR. in Journ. Linn. Soc. **16**, 27 (1877); HENRY, List Pl. Form. 110 (1896); CHRIST, Farnkr. 134 (1897); in WARB., Mons. **1**, 60 (1900); RACIB, Pterid. Buit. 145 (1898); DIELS in Nat. Pflanzenfam. 1-4. 283 (1899); MATSUM., Ind. Pl. Jap. **1**, 284 (1904); C. CHR., Ind. Fil. 24 (1905); in Acta Hort. Gothob. **1**, 92 (1924); in Contr. U. S. Nat. Herb. **26**, 310 (1931); in Dansk Bot. Ark. **7**, 125 (1932); MATSUM. & HAYATA, Fnum. Pl. Form. 616 (1906); v. A. v. R., Mal. Ferns 324 (1908); MAKINO & NEMOTO, Fl. Jap. 1572 (1925); HAND.-MAZZ., Symb. Sinic. **6**, 38 (1929); OGATA, Ic. Fil. Jap. **2**, t. 51 (1929).

Adiantum hirsutum BORY, Voy. **1**, 198 (1804); SW., l. c. 126; WILLD., l. c. 432.

Adiantum ciliatum BL., Enum. 215 (1828); v. A. v. R., l. c.

Nom. Jap. *Kuzyaku-denda*.

Hab. Formosa. Prov. Sintiku: Tokuran, Taiko: gun(Y. SIMADA, No. 5115! *June 18, 1923*). Prov. Takao: Takao in rupibus (U. FAURIE, N. 247! *Jan. 1914*); Bankinsing (U. FAURIE, No. 246! *Feb. 1914*); between Bôryô and Dai-zyurin (J. OHWI, No. 323! *March 31, 1933*); inter Batansya et Sizyûkei (M. TAGAWA, No. 997! *Sept. 23, 1934*). Prov. Kwarenkô: inter Batakan et Taro-koguti (M. TAGAWA, No. 904! *Sept. 12, 1934*); between Sinzyô and Tabito (J. OHWI, No. 1133! *Apr. 22, 1933*); inter Busegan et Batakan (M. TATEWAKI & S. KITAMURA! *March 14, 1932*). Prov. Taitô: prope Tippon-onsen (M. TAGAWA, No. 1008! *Oct. 1, 1934*).

Distr. Tropics and subtropics of the Old World.

3) *Adiantum philippense* L., Sp. Pl. **2**, 1094 (1753); SW., Syn. Fil. 120 (1806); WILLD., Sp. Pl. **5**, 428 (1910); HOOK., Sp. Fil. **2**, 3 (1851); COPEL., Polypod. Phil. 93 (1905); C. CHR. in Contr. U. S. Nat. Herb. **26**, 310 (1931); in Dansk Bot. Ark. **7**, 124 (1932); **9**, Nr. 3, 25 (1937); Ind. Fil. Suppl. III. 19 (1934).

Adiantum lunulatum BURM., Fl. Ind. 235 (1768); SW., 121 l. c. WILLD., l. c. 430; HOOK. & GREV., Ic. Fil. t. 104 (1828); HOOK., l. c. 11; BENTH., Fl. Hongk. 446 (1861); BEDD., Ferns South. Ind. t. 1 (1863); Handb. 82 (1883); MILDE, Fil. Eur. Atl. 28 (1867); HOOK. & BAK., Syn. Fil. 114 (1867), pro parte; KEYS. in Mém. Ac. St. Petersb. VII. **22**², 2, 25 (1875); CHRIST, Farnkr. 134 (1897), pro

parte; RACIB., Pterid. Buit. 144 (1898); DIELS in Nat. Pflanzenfam. 1-4. 283 (1899); MATSUM., Ind. Pl. Jap. **1**. 285 (1904); C. CHR., Ind. Fil. 29 (1905); MATSUM. & HAYATA, Enum. Pl. Form. 618 (1906); v. A. v. R., Mal. Ferns 325 (1908); DUNN & TUTCHER, Fl. Kwangt. Hongk. 338 (1912); KAKINO & NEMOTO, Fl. Jap. 1573 (1925); HAND-MAZZ., Symb. Sinic. **6**. 38 (1929); OGATA, Ic. Fil. Jap. **5**. t. 204 (1933).

Pteris lunata RETZ., Obs. **2**. 28. t. 4 (1781).

Adiantum lunatum CAV. Descr. 272 (1802).

Adiantum arcuatum Sw., Syn. Fil. 122 (1806).

Nom. Jap. *Hangetu-kuzuyaku*.

Hab. Formosa. Prov. Sintiku: Zôbi, Taiko-gun (Y. SIMADA, No. 4880! June 23, 1928). Prov. Taityû: inter Tonpo et Namakaban (M. TAGAWA, No. 510! Aug. 18, 1934).

Distr. Tropics of the Old. world.

4) ***Adiantum Edgeworthii*** Hook., Sp. Fil. **2**. 14. t. 81 B (1851); BEDD., Ferns Brit. Ind. t. 17 (1865); Hook. & BAK., Syn. Fil. ed. 2. 472 (1874); C. CHR., Ind. Fil. 26 (1905); in Acta Hort. Gothob. **1**. 93 (1924); in Contr. U.S. Nat. Herb. **26**. 310 (1931); HAND-MAZZ., Symb. Sinic. **6**. 38 (1929); KITAGAWA in Rep. First Sci. Exped. Manch. IV-2. 87 (1935); CHING, Ic. Fil. Sinic. **3**. t. 139 (1935).

Adiantum caudatum L. var. *Edgeworthii* (Hook.) BEDD., Handb. 84 (1883).

Adiantum caudatum L. var. *rhizophorum* WALL. ex CLARKE in Tr. Linn. Soc. II. Bot. **1**. 453 (1880).

Nom. Jap. *Otome-kuzuyaku*.

Hab. Manchuria. Prov. Fêng-t'ien: in monte Lung-t'an-shan circa Tê-li-syu (M. KOBAYASI! Aug. 20, 1934).

Distr. India, Indo-China, China (Yunnan, Szechwan, Kweichow, Hopei, Shantung), and South Manchuria.

var. ***Spenserianum*** (COPEL.) TAGAWA, comb. nov.

Adiantum Spenserianum COPEL. in Phil. Journ. Sci. **1**. Suppl. 2. 154. t. 11 (1906); v. A. v. R. Mal. Ferns 325 (1908); TAGAWA in Acta Phytotax. Geobot. **3**. 37 (1934)

Varietas pinnis chartaceis, falcatis, ascendentibus, basi oblique cuneatis, latere anteriore rectis vel concavis, posteriore convexis a typo diversa.

Nom. Jap. *Kagiba-kuzyakudenda*.

Hab. Formosa. Prov. Taiyû: between Hattûkwan and Rakuraku(J. OHWI, No. 3817! *July 9, 1933*).

Distr. Luzon and Formosa.

5) ***Adiantum capillus junosis*** RUPR., Dist. Cr. Vasc. Ross. 49 (1845); MILDE in Bot. Zeit. **1867**, 148 (1867); Fil. Eur. Atl. 29 (1867); HOOK. & BAK., Syn. Fil. 453 (1868); ed. 114 (1874); KEYS. in Mém. Ac. St. Petersb. VII. **22**². 1, 24 (1875); FRANCH., Pl. David. **1**, 348 (1884); DIELS in Nat. Pflanzenfam. 1-4. 283 (1899); in Bot. Jahrb. **29**, 200 (1900); HENRY, List Pl. Form. 116 (1896); MATSUM., Ind. Pl. Jap. **1**, 284 (1904); C. CHR., Ind. Fil. 24 (1905); in Acta Hort. Gothob. **1**, 93 (1924); MATSUM. & HAYATA, Enum. Pl. Form. 615 (1906); DUNN & TUTCHER, Fl. Kwangt. Hongk. 338 (1912); MAKINO & NEMOTO, Fl. Jap. 1572 (1925); HAND-MAZZ., Symb. Sinic. **6**, 38 (1929); TAGAWA in Acta Phytotax. Geobot. **1**, 101, 311 (1932) KITAGAWA in Rep. First Sci. Exped. Manch. IV-2. 87 (1935).

Adiantum cantoniense HANCE in Ann. Sci. Nat. sér. 4. **15**, 229 (1861); HOOK. & BAK., Syn. Fil. 114 (1867).

Nom. Jap. *Horai-kuzyaku*.

Hab. Kyûsyû. Prov. Bungo: Konagara, Nakano-mura (Z. TASIRO! *Aug. 14, 1920*); Mt.-Haki-yama, Nakano-mura (H. TOMIHISA! *July 17, 1923*).

Distr. China(Szechwan, Yunnan, Kwangtung, Hupeh), Manchuria(Jehol), and Kyûsyû.

HENRY recorded this species from Formosa, but no Japanese has found it there.

6) ***Adiantum capillus veneris*** L., Sp. Pl. **2**, 1096 (1753); Sw., Syn. Fil. 124 (1806); WILLD., Sp. Pl. **5**, 449 (1810); HOOK., Sp. Fil. **2**, 36 (1851); BEDD., Ferns South. Ind. t. 4 (1863); Handb. 84 (1883); MILDE, Fil. Eur. Atl. 30 (1867); HOOK. & BAK., Syn. Fil. 123 (1867); KEYS. in Mém. Ac. St. Petersb. VII. **22**². 15, 37 (1875); FR. & SAV., Enum. Pl. Jap. **2**, 211 (1876); BENTH., Fl.

Austr. **7**, 723 (1878); HARR. in Journ. Linn. Soc. **16**, 27 (1877); CLARKE in Tr. Linn. Soc. II. Bot. **1**, 453 (1880); LUERSS. in Bot. Jahrb. **4**, 355 (1883); in Krypt.-fl. **3**, 80, fig. 76 (1889); BAKER in Journ. Bot. **23**, 355 (1885); HILL., Fl. Haw. 634 (1888); HENRY, List Pl. Form. 615 (1896); CHRIST, Farnkr. 138 (1897); in Bull. Herb. Boiss. sér. 2. **1**, 1020 (1901); **4**, 612 (1904); DIELS in Nat. Pflanzenfam. I-4. 284 (1899); MATSUM., Ind. Pl. Jap. **1**, 284 (1904); COPEL., Polypod. Phil. 93 (1905); in Bishop Mus. Bull. **93**, 61 (1932); C. CHR., Ind. Fil. 24 (1905); in Acta Hort. Gothob. **1**, 93 (1924); in Bishop Mus. Bull. **25**, 17 (1925); in Dansk Bot. Ark. **7**, 125 (1932); MATSUM. & HAYATA, Enum. Pl. Form. 615 (1906); v. A. v. R., Mal. Ferns 333 (1908); BRITTON & BROWN, Ill. Fl. North. U. S. ed. 2. **1**, 31 (1913); SMALL, Fl. South-East. U. S. 10 (1913); SIM, Ferns South Afr. ed. 2. 245 (1915); ABRAMS, Ill. Fl. Pac. St. **1**, 24 (1923); MAKINO & NEMOTO, Fl. Jap. 1572 (1925); OGATA, Ic. Fil. Jap. **1**, t. 1 (1928); HAND.-MAZZ., Symb. Sinic. **6**, 39 (1929); DOMIN, Pterid. Dominica 140 (1929); C. CHR. & TARDIEU-BLOT in Not. Syst. **6**, 170 (1937).

Other synonyms are fully quoted in HOOK. l. c., MILDE l. c., LUERSS. l. c. (1889), and C. CHR. l. c. (1905).

Nom. Jap. *Hôrai-sida*.

Hab. Formosa. Prov. Taihoku: in silvis Keelung (U. FAURIE, No. 631! *May 30, 1903*); Sentô, Keelung (Y. SIMADA, No. 5409! *May 1934*); inter Eki-zyûkei et Doba (M. TAGAWA, No. 120! *July 28, 1934*). Prov. Takao: Bankinsing (U. FAURIE, No. 250! *Feb. 1914*). Prov. Kwarenkô: inter Batakan et Tabito (M. TATEWAKI & S. KITAMURA! *March 15, 1932*); between Sinzyô and Tabito (J. OHWI, Nos. 1041, 1042! *Apr. 21, 1933*); prope Tabito (M. TAGAWA, No. 721! *Sept. 7, 1934*).

Ryûkyû. Isl. Miyako (Y. NAKASONE! *Nov. 1936*). Isl. Okinawa: Syuri (G. KOIDZUMI! *May 13, 1923*); Okunoyama, Naha (G. KOIDZUMI! *May 14, 1922*).

Kyûsyû. Prov. Ôsumi: Isl. Tane-ga-sima (U. FAURIE, No. 4611! *July 1900*; Z. TASIRO! *July 22, 1920*); Kaziki (Z. TASIRO! *Nov. 5, 1923*); Takasu, Aira-mura (Z. TASIRO! *Oct. 18, 1914*); Tyôsa-mura (SAKASEGAWA! *Jan. 7, 1919*). Prov. Satuma: Kagosima (T. SUGINO! *Oct. 28, 1924*); Nagasaki-bana near Yamakawa (Z. TASIRO! *Aug. 16, 1921*). Prov. Hyûga: Obi (Z. TASIRO! *Oct. 9, 1924*); Udo (Z. TASIRO! *July 17, 1921*); Naomi near Kitaura (Z. TA-

SIRO! Apr. 28, 1922). Prov. Higo: Minamata (H. KENEDA! Sept. 15, 1935); Hondo-mura, Amakusa (T. TANIYAMA! June 20, 1931). Prov. Hizen; Dôsakimura (M. YAMASAKI! Jan. 27, 1907); Mt. Kurokami (K. YAMASITA! March 25, 1921); Saseho (Z. TASIRO!); Yosii-mura (Z. TASIRO!). Prov. Buzen: Higasikii-mura (T. YAMAZAKI! Aug. 30, 1924); Yabakei (Z. TASIRO! Sept. 3, 1921; T. SUGINO! Aug. 23, 1929). Prov. Bungo: Motozaru near Kamae (Z. KIYOHARA! Nov. 13, 1924); Isl. Taka-sima (Z. TASIRO! Aug. 2, 1921); Kona-gara (Z. TASIRO! Nov. 11, 1923).

Sikoku. Prov. Iyo: Utiumi-mura (M. OGATA! March 29, 1923). Prov. Tosa: Ioki (M. TAGAWA, No. 177! July 15, 1931; G. KOIDZUMI! Sept. 1, 1934).

Honsyû. Prov. Izu: Isl. Hachijô (S. KITAMURA! Apr. 10, 1930); Isl. Miyake-zima (K. HAYASI! Aug. 29, 1930).

Distr. Most tropics and subtropics of the World.

7) *Adiantum ogasawarense* TAGAWA, sp. nov.

Adiantum farleyense (MOORE err. det.) NAKAI in Bot. Mag. Tokyo **36**. 61 (1922); MAKINO & NEMOTO, Fl. Jap. 1573 (1925).

Adiantum Faberi (BAK. err. det.) MAKINO & NEMOTO, Fl. Jap. ed. 2. 18 (1931); OGATA, Ic. Fil. Jap. **5**. t. 202 (1933).

Rhizoma repens ca. 2 mm crassum, squamis brunneis anguste lanceolatis vel subulato-lanceolatis longe acuminatis subintegris 2-2.5 mm longis dense obtectum. Stipes plus minus approximatus, ca. 10 cm longus, ebeneus nitidus glaber, ad basin sparse squamatus. Lamina ovata vel triangulari-ovata obtusa, 7-8 cm longa 4-6 cm lata, bipinnata, tenuiter herbacea, in sicco submembranacea modice firma, utrinque glabra, rachide gracilis plus minus flexuosa ebenea nitida glabra, pinnis primariis alternis erecto-patentibus ovato-oblongis obtusis petiolatis imbricatis, pinnulis flabellato-obovatis vel flabellato-semiorbicularibus breviter petiolatis imbricatis 5-15 mm latis 5-10 mm longis, plerumque 2-5-lobatis, lobis denticulatis saepe lobulatis. Sori 1-10 pro pinnula, indusiis falsis rigide membranaceis integris fusco-brunneis 1-3 mm latis ca. 1 mm altis.

Nom. Jap. *Iwa-hôraisida*.

Hab. Bonin. Isl. Ani-sima (M. OGATA! Cultivated in Tôkyô. Type in Herb.

Kyôto Imp. Univ.).

This is very near to *Adiantum capillus veneris* L., but differs from it by the ebeneous stipe and rachis, the imbricate pinnæ and pinnulæ, and by the broader but shorter rhizome-scales which are narrowly lanceolate to subulate-lanceolate, 2–2.5 mm long. Pinnules are more roundish, broadly cuneate or subtruncate at base, and a little firmer in texture. It is certainly not *A. farleyense* MOORE, as believed by NAKAI; *A. farleyense* is a garden variety of *A. tenerum* SW., with pinnules of quite different shape, colour, and texture. It is also rashly referred to *A. Faberi* BAK. by some authors, but this Chinese species does not bear the slightest resemblance to it.

8) ***Adiantum formosanum* TAGAWA, sp. nov.**

Rhizoma repens 1–1.5 mm crassum, squamis atro-brunneis subulato-lanceolatis longe acuminatis integris ad 2 mm longis dense obtectum. Stipes plus minus approximatus 5–15 cm longus gracilis rubro-castaneus nitidus glaber, basi squamis anguste lanceolatis longe acuminatis integris ad 2.5 mm longis sparse obtectus. Lamina in ambitu ovato-lanceolata ovata vel triangulari-ovata acuta bi- vel tripinnata, 5–10 cm longa 3–4 cm lata, saepe sesquibrevior quam stipite, utrinque glabra, tenuiter herbacea sed modice firma, rachide leviter flexuosa rubro-castanea glabra nitida, pinnis primariis alternis erecto-patentibus ovatis obtusis distincte petiolatis, inferioribus 3–5 cm longis (cum stipitibus 5–10 mm longis), 1–2 cm inter se remotis, pinnis ultimis fertilibus oblique flabellatis 5–10 mm latis 4–6 mm longis breviter petiolatis ex apice profunde bilobatis, lobis plerumque tenuiter bi- vel raro tri-lobulatis, lobulis, truncatis, pinnis ultimis sterilibus flabellato-obovatis rarissime bilobatis margine exteriori subintegris vel crenulatis, venulis ad marginem non attingentibus. Sori 2–4–(5) pro pinna ultima, indusiis falsis membranaceis integris ca. 1 mm altis 1–2 mm latis.

Nom. Jap. *Miyama-hôraisida*, (nom. nov.).

Hab. Formosa. Prov. Taityû: Nôkô-goe (J. OHWI, No. 3268! *June 1933*. Type in Herb. Kyôto Imp. Univ.).

This is very near to *Adiantum Wattii* BAK., and is probably a local variety of it. In our species stipe is much longer than lamina and is often twice as

long, while in *A. Wattii* they are nearly equal in length. Lamina of ours is ovate-lanceolate to triangular-lanceolate, 5-10 cm long by 3-4 cm wide, but of *A. Wattii* is nearly deltoid, 10-13 cm long by 5-6 cm wide. Ultimate pinnæ are also somewhat different in size and shape.

9) ***Adiantum coreanum*** TAGAWA in Acta Phytotax. Geobot. **1**, 159 (1932).

Rhizoma longe repens gracilis vix 1 mm crassum dichotome divisum fusco-brunneum, squamis ovato-lanceolatis acuminatis ad 1.5 mm longis fusco-brunneis nitidis subdense vestitum. Stipes remotus 15-20 cm longus castaneus nitidus praeter basin parce squamatus glaber, rachide plus minus flexuosa castanea nitida glabra. Lamina in ambitu late ovata 10-12 cm longa 6-8 cm lata acuta tripinnata tenuiter chartacea utrinque glabra in sicco glaucescentiviridis, pinnis primariis alternis ovatis obtusis erecto-patentibus, inferioribus 2 cm superioribus 1 cm inter se remotis, infimis maximis ad 6 cm longis 3 cm latis, sequentibus sensim minoribus, pinnis ultimis cuneatis 6-7 mm longis 4-7 mm latis latere exteriori rotundatis vel subtruncatis argute denticulatis, dentibus nuncquam aristatis, venulis ad summum dentis attingentibus. Sori 1 vel rarissime 2 pro pinna ultima, indusiis falsis semiorbicularibus vel paulo oblongis 1.5-3 mm latis non vel leviter sinuatis.

Nom. Jap. *Kôrai-hakonesida*.

Hab. Korea. Prov. Kanhoku : Gôsui (J. OHWI, No. 2796! July 28, 1930. Type in Herb. Kyôto Imp. Univ.).

A rare fern, being collected only once at the locality. It is exceedingly near to *Adiantum Davidii* FRANCH., but is distinct from it by the broadly ovate lamina of slightly thinner texture, and the narrower ultimate pinnæ with sharp but not aristate teeth on outer margin. In *A. Davidii* the lamina is deltoid acuminate and more rigid in texture, and the ultimate pinnæ are distinctly aristate-serrate on outer margin.

10) ***Adiantum taiwanianum*** TAGAWA in Acta Phytotax. Geobot. **4**, 93 (1935).

Rhizoma breviter repens vel ascendens, squamis nigro-castaneis subulatis 2-3 mm longis dense obtectum. Stipes gracilis 8-20 cm longus, ut rachide

castaneus nitidus glaber, basi paulo farinosus squamis castaneis lanceolatis longe acuminatis integris 2-3 mm longis parce vestitus. Lamina lanceolata vel ovato-lanceolata obtusiuscula tri- vel quadripinnata, 10-15 cm longa 3-4 cm lata saepe sesquibrevior quam stipite, pinnis primariis ovatis obtusis erecto-patentibus alternis petiolatis, inferioribus a se 2-4 cm remotis 2-4 cm longis (cum petiolis 3-5 mm longis) 1-1.5 cm latis, pinnis ultimis subcoriaceis breviter petiolatis utrinque glabris subtus pallidoribus, pinnis ultimis fertilibus integris obcordatis basi cuneatis apice bilobatis, rarissime obtriangularibus apice trilobatis, 2-4 mm longis et latis, pinnis ultimis sterilibus obovatis vel obtriangularibus apice rotundatis obscure crenulato-denticulatis basi cuneatis 5-6 mm longis 3-4 mm latis, venulis ad marginem non attingentibus. Sori 1 rarissime 2 pro pinna ultima basi sinuolum singuli, indusiis falsis brunneis subrotundatis margine subintegris vix 1.5 mm latis.

Nom. Jap. *Hime-hakonesida*.

Hab. Formosa. Prov. Kwarenkô : inter Sekigahara et Gôkwan, ca. 3000 m alt. (M. TAGAWA, No. 820 ! Sept. 10, 1934. Type in Herb. Kyôto Imp. Univ.). Prov. Taityu : between Tutuzi and Minami (Mt. Daisuikutu) (I. SIMOZAWA ! Dec. 3, 1933).

An elegant small fern, restricted to the alpine regions. This is near to *Adiantum Roborowskii* MAXIM. and *A. erythroclamys* DIELS, but differs from them by the much longer stipe, often twice as long as lamina, and by the much smaller ultimate pinnae bearing usually one rarely two sori. From *A. Faberi* BAK. it differs also by the obcordate or obtriangular ultimate pinnae of a smaller size.

(to be continued)